Remarks/Arguments

This is a complete response to the Office Action mailed on 25 September 2006 in which claims 1- 13 were rejected. Claim 14 has been withdrawn. New claims 15-17 have been added. Claims 1-13 and 15-17 are pending. Reconsideration and further examination of the subject application are respectfully requested.

New Claims

Support for new claim 15, the text of which is provided below, may be found on page 4, lines 5-6 of the current application.

15. The battery safety monitor system of claim 1 wherein said at least one battery is lithium based.

Support for new claim 16, the text of which is provided below, may be found on page 5, line 31 through page 6, line 5 of the current application.

16. The battery safety monitor system of claim 12, wherein said wetness detector comprises two narrowly spaced conductors that are operatively coupled to a high impedance voltage and an input of said A/D converter, wherein said wetness detector is configured to produce a reduced voltage when thionyl chloride condenses on said two narrowly spaced conductors.

The text of new claim 17 is provided below. Support from the current application for the various elements of new claim 17 is provided as follows: Support for elements a) and b) may be found in original claim 7 on page 11, lines 3-5. Support for element c) may be found on page 5, lines 9-11, 16-17 and in Fig. 2. Support for element d) may be found on page 4, lines 30-31. Support for element e) may be found on page 5 lines 4-7 and original claim 7, element c)ii).

17. A battery safety monitor system, comprising:
a) a battery cell string capable of outputting voltage signals;

b) a safety device, electrically coupled in series to said battery cell string, wherein said safety device is capable of preventing damage to said battery cell string;

c) a battery monitor operatively coupled to receive said voltage signals, said battery monitor comprising:

i) a zener diode configured to generate low voltage signals responsive to said voltage signals;

ii) an A/D converter configured to transform said low voltage signals into digital signals; and

iii) a first microcontroller configured to transform said digital signals into output digital signals representative of a voltage level of said battery cell string, wherein said first microcontroller is capable of transmitting control signals; and

d) a display device configured to receive said output digital signals, said display device capable of displaying battery conditions; and

e) a separate power supply, operatively coupled to said battery monitor and said display device, capable of supplying power to said battery monitor and said display device.

Support for new claim 18, the text of which is provided below, may be found in original claim 8 on page 12, page 5, lines 18-20, page 6, lines 17-24, and in Fig. 2 of the current application.

18. The battery safety monitor system of claim 17, wherein said battery monitor further comprises:

iv) an analog multiplexer configured to receive said control signals, wherein said analog multiplexer is disposed to selectively allow said voltage signals from one battery of said battery cell string to be received by said zener diode in response to said control signals from said first microcontroller; and

v) an optoisolator, configured to transform said output digital signals into isolated digital signals, wherein said display device is configured to receive said isolated digital signals, wherein said separate power supply is configured to supply said power to said

optoisolator, and wherein said optoisolator is capable of preventing reverse currents from entering said battery cell string.

Support for new claim 19, the text of which is provided below, may be found on page 6, lines16-24 and original claim 9 on page 12 of the current application.

19. The battery safety monitor system of claim 18, wherein said optoisolator further comprises:

(1) a serial interface, configured to receive said output digital signals from said first microcontroller; and

(2) long wires, configured to receive said power and to guide said isolated digital signals to said display device such that said display device is located remotely from said battery monitor.

Support for new claim 20, the text of which is provided below, may be found on page 4, lines 14-27 and Fig. 1 of the current application.

20. The battery safety monitor system of claim 18, further comprising a plurality of said battery cell strings and a plurality of said battery monitors, wherein each of said battery monitors is configured to receive said voltage signals from one of said battery cell strings, and said battery safety monitor system further comprises:

f) a digital multiplexer disposed to receive said isolated digital signals from said plurality of battery monitors; and

g) a second microcontroller configured to transmit second control signals to said digital multiplexer, wherein said digital multiplexer is disposed to selectively allow said isolated digital signals from one of said plurality of battery monitors to be received by said second microcontroller in response to said second control signals, and said second microcontroller is disposed to transform said isolated digital signals into second output digital signals, wherein said second microcontroller is configured to transmit said second output digital signals to said display device.

Support for new claim 21, the text of which is provided below, may be found on page 6, line 26 through page 7, line 16 and Fig. 3 of the current application.

21. The battery safety monitor system of claim 20, wherein said safety device comprises:

i) a positive thermal coefficient device operatively coupled in series with and in close proximity to said battery cell string, wherein said positive thermal coefficient device provides overcurrent protection to said battery cell string;

ii) a thermal fuse operatively coupled in series between said positive thermal coefficient device and said battery cell string, wherein said thermal fuse is in close proximity to said battery cell string;

iii) a fuse operatively coupled in series with said battery cell string, wherein said fuse is configured to provide overcurrent protection to said battery cell string; and

iv) an isolation diode operatively coupled in series between said fuse and said analog multiplexer, wherein said isolation diode prevents reverse currents from entering said battery cell string.

The above claims have been added by Applicant not to overcome any rejection but to more thoroughly describe what Applicant views as his invention.

35 USC § 102(b) Rejection

Claims 1-3, 5, and 7 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent application 2002/0111756 to Modgil (Hereinafter *Modgil*). Applicant respectfully traverses the rejection and contends that *Modgil* does not disclose each and every element of claims 1-3, 5, and 7 and is therefore an improper basis for a 102(b) rejection.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference...The identical invention must be shown in as complete detail as contained in the ...claim. MPEP §2131

Regarding claim 1, the Office Action maintains that the cigarette lighter plug of *Modgil* is equivalent to the power supply of claim 1. (Office Action page 2) However, a

plug is not equal to a power supply. Furthermore, even assuming for the sake of argument that a plug could equal a power supply, *Modgil's* cigarette lighter plug receives power from an automobile battery that the Office Action states is equivalent to the "at least one battery comprising at least one cell string" of claim 1. The battery and the power supply disclosed in the current application are disclosed as separate elements. (See Application Claim 1, elements a) and f)) Thus, *Modgil's* automotive battery may not be both the battery and the power supply of claim 1. *Modgil* does not expressly or inherently disclose a separate power supply as is required in claim 1. Also, the zener diode 1232 from fig. 12 of *Modgil* is not equivalent to the "at least one safety device ...operatively coupled to said at least one battery cell string..., capable of preventing damage to said at least one battery cell string" of claim 1, as maintained by the Office Action. (Office Action page 2) The zener diode of *Modgil* is not configured to prevent damage to the battery of *Modgil*, but is in fact configured to protect the MOSFET 1224 of *Modgil*. (See *Modgil* fig. 12, page 11, ¶ 0111) Applicant respectfully requests that the 102b rejection of claim 1 be withdrawn.

Regarding claim 7, the Office Action has not shown a battery monitor operatively coupled to a string unit, as disclosed in claim 7. The Office Action points to a zener diode and a microcontroller in *Modgil*, but offers no explanation of how those two elements form part of a battery monitor operatively coupled to a string unit. (Office Action page 2) *Modgil* does disclose a battery monitoring function, but *Modgil's* zener diode does not contribute to that function. (*Modgil* ¶ 0090) *Modgil's* zener diode protects a MOSFET. (*Modgil* ¶ 0111) Finally, the limitation of claim 7 of a data collection and display device comprising a display device and a power supply operatively coupled to a battery monitor and the display device is not shown in *Modgil*. *Modgil* shows a blinking light and an automotive battery, but as explained above with respect to claim 1, the power supply and the battery cell string are different elements of claim 7. Therefore, Applicant respectfully requests that the 102b rejection of claim 7 be withdrawn.

In regards to claims 2, 3, and 5, because those claims are dependent on claim 1, which has been shown to be unanticipated by *Modgil*, the rejection of claims 2, 3, and 5 is respectfully requested to be withdrawn.

35 USC § 103 Rejection

Claims 4, 6, and 8-13 have been rejected under 35 USC 103(a) as being unpatentable over *Modgil* in view of US patent 5,646,534 to Kopera (Hereinafter *Kopera*). Applicant respectfully submits that I) there would be no reasonable expectation of success at arriving at the claimed invention and II) that not every limitation of the claimed invention is taught or suggested by the cited references.

I. No Reasonable Expectation of Success.

> *The prior art can be modified or combined to reject claims as prima facie obvious* ***as long as there is a reasonable expectation of success.*** MPEP 2143.02 (emphasis added)

Regarding claims 6 and 8, the Office Action maintains that *Kopera* and *Modgil* may successfully be combined to provide a battery safety monitoring system with an "optoisolator to transmit a high power digital signal across the [border] to the low voltage non-isolated side." (Office Action page 5 and 6) However, claims 6 and 8 require an optoisolator "capable of preventing reverse currents." (Application claim 6) The optoisolator taught in *Kopera* is capable of preventing ***direct*** currents from reaching the battery, but does not prevent ***reverse*** currents from entering the battery because *Kopera* also includes a transformer to supply power to the "isolated" side. (*Kopera* col. 5, lines 8-14 and Fig. 1) *Kopera* and *Modgil* both utilize rechargeable type vehicle batteries. Therefore, there would be no reasonable expectation of preventing reverse currents as required by claims 6 and 8.

Regarding claim 13, the Office Action maintains that it would be obvious for one skilled in the art to provide a digital multiplexer to the combination of *Kopera* and *Modgil*. (Office Action page 6) However, there could be no reasonable expectation of success in modifying *Kopera* and *Modgil* by adding a digital multiplexer because there must be a plurality of digital signals for a digital multiplexer to multiplex. Batteries produce analog voltage signals. No plurality of digital signals is found or suggested in the cited references.

II. Every Limitation Not Disclosed.

To establish prima facie obviousness of a claimed invention, ***all the claim limitations must be taught or suggested by the prior art.*** MPEP 2142.03 (emphasis added)

Regarding claims 4, 6, and 8-13, each is dependent on either claim 1 or 7 of the current application. As discussed above, *Modgil* fails to expressly or inherently disclose every limitation of those claims. Therefore, every element of claims 4, 6, and 8-13 likewise has not been disclosed and the claims are therefore unobvious.

Regarding claim 9, the Office Action maintains that *Kopera* and *Modgil* may be successfully combined to provide a battery safety monitoring system with an "optoisolator to transmit a high power digital signal across the [border] to the low voltage non-isolated side." (Office Action page 5 and 6) The border referenced by the Office Action and taught in *Kopera* is not a connector of an optoisolator, but rather an internal part of the optoisolator over which optical signals may pass.

Regarding claim 11, the Office Action maintains that *Kopera* discloses a connector comprised of long wires. (Office Action page 5) Applicant respectfully disagrees. Col. 2, lines 1-8 of *Kopera*, cited to by the Office Action, discloses "high voltage wires...limited in length for safety purposes." *Kopera* in fact teaches away from the use of long wires in the section cited above as well as in other sections that disclose a battery monitor positioned proximate to the batteries. (*Kopera* col. 1, line 11)

Regarding claim 12, the Office Action maintains that a wetness detector is "implicitly defined" by *Kopera*. (Office Action page 6) Applicant respectfully disagrees. Electrolyte leakage is not necessarily accompanied by a decrease in voltage or temperature of a battery. Thus, a voltmeter and a temperature sensor do not necessarily equate to a wetness detector. Applicant respectfully requests supporting evidence or an affidavit under MPEP 2144.04 C. establishing that a voltmeter or a temperature sensor equals a wetness detector and that "electrolyte leakage of a battery is detected when a voltmeter (voltage sensor) or a thermal sensor reads a decrease in the temperature of a battery due to electrolyte leakages."

Regarding claim 13, the Office Action maintains that *Kopera* teaches a multiplexer. (Office Action page 6) Claim 13 discloses and requires a ***digital*** multiplexer. No digital multiplexer is taught or suggested by either *Kopera* or *Modgi*l. The Office Action states, "the multiplexer [of *Kopera*] is an ***analog*** mux that receives [voltage] signals of analog inputs." (Office Action page 6)(emphasis added) As stated in the Office Action, *Kopera* teaches an analog multiplexer, but contains no teaching or suggestion of a digital multiplexer. However, the Office Action maintains that "at the time of the invention it would have been obvious to a person of ordinary skill in the art to provide a digital multiplexer that receives...digital signals and [selects] from one of the plurality of [these] signals." (Office Action page 6) Applicant respectfully disagrees. The fact that digital multiplexers were known in the art at the time of the invention does not make the claimed invention of the current application obvious. There must be some reason/motivation for one skilled in the art to add a digital multiplexer to *Modgil* and *Kopera*. As explained above, there would be no reason to add a digital multiplexer to *Modgil* and *Kopera* because there are not multiple digital signals present in *Modgil* and *Kopera* to multiplex. Applicant respectfully requests supporting evidence or an affidavit under MPEP 2144.04 C. establishing that it would be obvious (i.e. common knowledge) to provide a digital multiplexer to the combination of *Modgil* and *Kopera*.

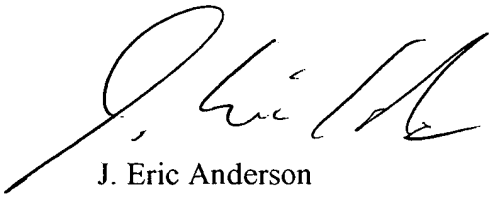
Applicant respectfully submits that a prima facie case of obviousness has not been established with respect to claims 4, 6, and 8-13. Consequently, Applicant requests that the 103(a) rejection of claims 4, 6, and 8-13 be withdrawn.

Conclusion

For the reasons stated above, Applicant respectfully requests withdrawal of the rejections of claims 1-13. Applicant respectfully submits that claims 1-13 and 15-21 of the present application are in condition for allowance.

No Fee is required for this response.

Respectfully Submitted,



J. Eric Anderson
Reg. No. 58706
Tel.: (619) 553-3001